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Report to Rep. Harley O. Staggers, Chairman, House Committee on Interstate and Foreign Commerce; Rep. John E. Moss, Chairman, House Committee on Interstate and Foreign Commerce: Oversight and Investigations Subcommittee; by Elmer B. Staats, Comptroller General.

Issue Area: Energy (1600); Accounting and Financial Reporting (2800).
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Congressional Relevance: House Committee on Interstate and Foreign Commerce; House Committee on Interstate and Foreign Commerce: Oversight and Investigations Subcommittee.

Current accounting in the oil and natural gas industry is characterized by the use of two basic accounting concepts known as the successful efforts concept and the full-cost concept. The accounting practices used by the Shell Oil Company, which uses the successful efforts concept, and by the Houston Oil and Minerals Corporation, which uses full-cost accounting, were examined. Findings/Conclusions: Shell records revenue separately for each product produced at the wellhead. Shell does not segregate costs for wellhead products. Direct costs are added to the allocated costs attributed to crude oil to establish a corporate crude oil inventory value. A study conducted by Shell indicated that the use of a full-cost accounting system would reflect increases in net income with corresponding decreases in expenses as well as decreases in the rate of return on stockholders' equity and increases in net capital assets. Houston Oil and Minerals Corporation records revenues separately for oil, gas, and natural gas liquids produced at the wellhead, but does not allocate costs to wellhead products. Expenses other than those in the cost pools appear as period costs on the income statement. No attempt is made to allocate costs to corporate inventory. A change to successful efforts accounting would be expected to decrease Houston Oil and Minerals' net income. The exploration and production costs bear no relationship to the prices charged by either company for oil or gas. (SC)

COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON, D.C. 20548

July 11, 1977

B-178726

02783

The Honorable Harley O. Staggers
Chairman, Committee on Interstate
and Foreign Commerce
House of Representatives

The Honorable John E. Moss
Chairman, Subcommittee on
Oversight and Investigations
Committee on Interstate and
Foreign Commerce
House of Representatives

In response to your request that we gain firsthand knowledge of accounting treatment for exploration and production activities, we made a survey of accounting practices to show how they relate to cost and other financial information of two companies engaged in the domestic production of oil and natural gas. The two companies were:

--Shell Oil Company, a major integrated oil company which uses the "successful efforts" concept of accounting.

--Houston Oil and Minerals Corporation, an independent producer of oil and natural gas which uses the "full-cost" concept of accounting.

We have studied the accounting procedures used by these firms to gain an understanding of the effects and rationale of the accounting procedures for accumulating financial data. We gave particular attention to the areas of interest indicated in the request, including the accounting issues regarding allocation of revenue and expenditures through time and allocation of revenue and expenditures among products.

In the following sections of this letter, we have summarized our observations on some of the more important aspects of the survey. A summary of the detailed information

obtained through our survey is included as enclosure I. We have briefed your staff on the information presented therein during the course of our survey.

In a separate but related effort, we have been closely following the efforts of the Securities and Exchange Commission to develop accounting practices which will enable the compilation of a reliable energy data base, for government policy and decision-making purposes, related to the production of crude oil and natural gas. We expect to separately report on the progress and ultimately the results of those efforts.

SUCCESSFUL EFFORTS AND FULL-COST ACCOUNTING CONCEPTS

Current accounting in the oil and gas industry is characterized by the use of two basic accounting concepts known as the successful efforts concept and the full-cost concept.

Prior to 1950 virtually all oil and gas companies followed successful efforts accounting. Under this concept, costs that do not result in the direct discovery or development of oil and gas reserves (i.e., nonproductive costs) are charged as expenses against current period income. Those costs which are related to actual discoveries or development of oil and gas reserves are placed in asset accounts, carried on the balance sheet, and charged against income as mineral reserves are produced. Most of the major oil companies in the United States whose accounting systems predate the introduction of the full-cost concept, still follow the successful efforts concept today.

During the late 1950s, the full-cost concept was introduced. This concept has gained substantial acceptance throughout the industry since that time. Under the full-cost concept of accounting, all costs of finding oil and gas are charged against income, just as with the successful efforts concept. The difference occurs with respect to the timing of the charges against income. Under the full-cost accounting concept, all exploration and development costs associated with finding and developing oil and gas reserves (whether productive or nonproductive) are placed in asset accounts and charged against income during the periods that total mineral reserves are produced. The rationale behind this concept is that the costs of the entire discovery and development effort are associated with total

reserves found and should be charged against income as those reserves are produced.

The industry and the accounting profession have, for several years, debated the question of which of the two basic concepts results in the most meaningful presentation of financial position and operating results. There are persuasive arguments for each concept and both can be conceptually supported within the present framework of accounting theory. This issue is currently under study by the Financial Accounting Standards Board. Chapter V of the Board's Discussion Memorandum entitled "Financial Accounting and Reporting in the Extractive Industries" contains a comprehensive and concise presentation of the two basic concepts and the arguments for and against each one. A copy of this discussion is included as enclosure II.

The Board expects to issue a Statement of Financial Accounting Standards by the end of this year stating what concept should be followed in accounting for exploration, development, and production activities for financial reporting purposes.

Several studies have been made to compare the financial statement effects of the two basic methodologies. Although these studies have revealed that because of timing differences, the financial statements will show differing period results depending on various factors or events, they have not been able to provide conclusive arguments to establish either method as preferable under all circumstances.

EFFECTS ON COMPANIES SURVEYED OF A CHANGE IN ACCOUNTING CONCEPTS

During 1976, Shell Oil Company conducted a study comparing financial results under successful efforts to that which would result from a hypothetical full-cost accounting system. The study was not based on an indepth analysis but was designed to only provide an indication of the effects a change might have. The study analyzed the 13-year period from 1963 through 1975 and generally reflected increases in net income with corresponding decreases in expenses under the full-cost concept. The average increase in net income over the 13-year period was approximately 9 percent. Shell's comparison also reflected decreases in the rate of return on stockholders' equity and increases in net capital assets under the full-cost concept.

Houston Oil and Minerals Corporation did not have any data available that would allow us to readily evaluate the effects on the company's financial statements of a change to the successful efforts concept. Although the company utilizes a computer service for the preparation of its management reports, the company controller estimated that a change in accounting concept would require a manual conversion involving four full-time employees over a period of approximately 6 months. Houston Oil and Minerals is currently experiencing rapid growth and is incurring large exploration and production expenditures. In light of this, a change to successful efforts would be expected to decrease company net income by expensing the costs of ventures that do not result directly in the discovery of mineral reserves.

ALLOCATION OF REVENUES AND COSTS TO WELLHEAD PRODUCTS AND EFFECT ON PRICING

Shell Oil Company

Shell records revenue separately for each product produced at the wellhead. Revenues for both sales and transfers are separately recorded at the price paid by third parties--either the Government-regulated price or market price. Transfers (products transferred between departments) are recorded by Shell at the third-party price for memorandum purposes only; no actual transfer of funds takes place.

Shell does not segregate costs for wellhead products. However, Shell maintains a corporate inventory account of oils and chemicals which includes a cost for produced crude oil in inventory. Because crude oil production costs and gas production costs are recorded jointly in one series of accounts, the portion applicable to crude oil production is arbitrarily calculated for inventory purposes, based on relative sales values.

Other direct costs of transportation, gathering, storage, and outside purchases of crude oil and products are added to the allocated costs attributed to crude oil to establish a corporate crude oil inventory value. Some costs for exploration and production operations which do not contribute to the cost of crude oil in corporate inventory, such as Exploration and Land departments overhead costs, dry hole cost, and oil and gas lease rentals, are not included in the corporate

inventory value because, under successful efforts, they are not costs directly incurred to produce oil and gas.

The prices at which Shell sells wellhead products to independent refineries are not directly affected by the cost of exploration and development. The prices are either Government-regulated or negotiated market prices. The sales value to independent refineries is also the value at which intra-company transfers are recorded.

Houston Oil and Minerals

Houston Oil and Minerals records revenues separately for oil, gas, and natural gas liquids produced at the wellhead. Condensate is recorded as oil revenue. The company does not allocate costs to wellhead products.

Expenses other than those in the cost pools (e.g., production expenses, interest expenses, or other operating expenses) are likewise not allocated to wellhead products, but rather appear as period costs on the income statement.

Houston Oil and Minerals makes no attempt to allocate costs to corporate inventory. Inventories of oil are very small and are carried on corporate books and financial statements at market values. The company maintains no inventories of natural gas.

Like Shell, Houston Oil and Minerals' exploration and production costs bear no relationship to the prices of oil and gas. Prices are Government-regulated or negotiated market prices.

The enclosures to this letter have been reviewed by the respective companies and they have no disagreement.

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As indicated in my letter to you dated May 25, 1977, regarding the status of our verification examination (title V) activities, we have an assignment underway at the request of several Congressmen regarding the costs and profits of producers of natural gas. That assignment will provide a logical followup to the survey work completed to date. We will be happy to make a

copy of the report available to you when issued; now expected in the first quarter 1978.

We will be glad to brief you or your staff further on the survey results if you believe that would be useful.

Sincerely yours,

Comptroller General
of the United States

Enclosures - 2

SHELL OIL COMPANY

OVERVIEW OF COMPANY OPERATIONS

Shell Oil Company is an integrated company that explores for, develops, produces, purchases, transports, and markets crude oil and natural gas. The company also purchases, manufactures, transports, and markets oil and chemical products.

Shell and its subsidiaries operate principally in the United States. Domestically, Shell believes that it ranks third in crude oil and gas liquids production, third in refinery of crude oil, and fourth in oil product sales. Shell is the largest producer in the Gulf of Mexico, with 35 percent of its total oil and gas production originating from fields in this area.

Shell's total oil and gas production has been decreasing since 1972. The primary reasons for the decline in production and reserves, according to Shell, is declining output from older fields and the growth of United States energy consumption at a faster rate than supplies can be replenished by new exploration and development.

In contrast to the decline in production and reserves, Shell's exploration and production capital and exploratory expenditures for oil and gas have increased. From 1966 to 1973, expenditures fluctuated between $321 million and $467 million. However, total expenditures climbed rapidly to $733 million in 1974 and then to $918 million in 1976. About 90 percent of the 1976 expenditures were for domestic exploration and production projects.

As for foreign ventures Shell participates with other parties in exploring for oil and gas in Sabah, Cameroon, Canada, New Zealand, and Brazil. As of the end of 1976, only one field in Sabah has gone into production.

Besides developing crude oil and natural gas, Shell is developing or investigating alternative energy sources, such as coal, tar sands, geothermal steam, and solar energy.

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In 1976 Shell earned record high profits of $706 million which it attributes to the effects of economic conditions on the demand for oil and chemical products, and increased revenues from sales of natural gas.

All exploration development and production activities are managed through Shell's Exploration and Production (E&P) department. As a department, Shell does not maintain a complete set of corporate accounts; however, accounts are maintained to provide sufficient data to facilitate the preparation of reports on departmental revenues and expenses.

ACCOUNTING POLICIES AND PRACTICES

Company philosophy

Shell uses the successful efforts concept of accounting for extractive costs. Under this concept costs that result directly in identifiable future benefits from the discovery, acquisition, or development of specific mineral reserves are capitalized; costs that do not directly provide future benefit in the form of recoverable reserves (i.e., nonproductive costs) are expensed as incurred.

Shell categorizes the following as nonproductive costs to be expensed during the period incurred.

Geological and geophysical costs (G&G)--Shell expenses these costs because most cannot be related to a field at the time of incurrence and only a small portion can be subsequently related. Costs may be incurred many years prior to lease acquisition with part of the cost attributable to areas where no mineral rights were acquired. Shell estimates that only about 5 percent of all G&G costs is applicable to producing fields with the rest related to properties that are nonproductive or never leased.

Lease rental and land department expense--These costs are necessary to hold property. Shell considers them as period costs because they do not add value to the property and do not increase income potential.

Shell regards expensing these costs as being completely objective since it recognizes as a current expense what is either a period cost or a cost

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that in large measure will ultimately prove to be unrelated to mineral reserves.

Exploration and development dry hole costs--Shell believes that these losses should be currently reflected in income to fairly present period results. Also, it believes that such costs contribute nothing in the way of future income and their deferral would tend to level income by spreading the losses over future periods.

In accordance with the successful efforts concept, Shell capitalizes costs which result directly in future revenues and subsequently expenses them on a pro-rata basis as reserves are extracted. Capitalized costs include acquisition and bonus costs of producing properties, and intangible and tangible development costs of successful wells.

Shell does not favor the full-cost concept because it believes the full-cost concept (1) capitalizes costs that have no present or future value and (2) fails to recognize losses as they occur. As such, Shell believes that its financial statements under the successful efforts concept most fairly represents the company's operations and financial position.

Cost center

Shell's cost center for the accumulation and amortization of capitalized cost (cost of successful exploration and production ventures) is the field which they define as an area consisting of a single reservoir or multiple reservoirs grouped on or related to the same individual geological structural feature and/or statigraphic condition of the earth.

This cost center was chosen because its reasonably exact boundaries and characteristics of size facilitate a meaningful matching of costs with revenues, and produce consistent and objective reporting results. Shell believes the field more closely reflects the causal relationship between exploratory and development efforts and reserves discovered. The following exploration and production financial information is available by cost center. 1/

1/ Prior to defining a field, costs are accumulated by well or by lease prospect.

--Appropriations and commitments of funds.
--Drilling costs--intangible and tangible.
--Land and leasehold costs.
--Production operating expenses.
--Depreciation, depletion, and amortization.
--Production revenues.
--Operating profits.

Accounts used for recording costs

Shell's exploration and production costs are not accumulated by the categories (prospecting, acquisition, exploration, development, and production) specified by section 503(c) of the Energy Policy and Conservation Act. Instead they are accumulated into accounts based on the following major categories:

Exploration expenses

Exploration expenses include lease rental, geological and geophysical costs, test well contributions, taxes, depreciation, supervision, and overhead.

Land department expenses

Land department expenses are the costs of land survey parties, supervision, overhead, taxes, and depreciation. Separate accounts are established for each of these costs.

Work in progress

The work in progress category includes several types of cost--intangible development, tangible development, and field improvements as well as costs of other major projects or purchases.

Intangible development costs, as defined by Shell, are those which have no salvage value but which are incident to and necessary for drilling and preparing wells for the production of oil and gas. These costs include consumable materials, drilling, labor, transportation, and other services.

Tangible development costs are the costs of tangible equipment installed in the drilling and completion of wells and any construction, hauling, and installation costs incurred beyond the wellhead.

Field improvements consist of the cost of capital additions or replacements of well, lease, and field

equipment to improve and sustain equipment for the production of oil and gas after initial completion of wells.

For both intangible and tangible development costs, separate accounts are maintained for exploration, development, and secondary recovery drilling operations.

Plant, property, and equipment (capital accounts)

Capital investments accounts are the expenditures for land and leases (leasehold costs); well, lease, and field tangible and intangible development costs; gas plants; and other equipment.

Production expense

Production expenses consist of the costs of operating producing properties and include well repair and maintenance; lift and injection activities; dehydration activities; well recompletion and reconditioning; utilities; field supervision; warehouse activities; taxes; insurance; overhead; and depreciation, depletion, and amortization.

Natural gas processing plant expenses

This category includes the cost of labor, salaries, payroll burden, materials, supplies, fuel, power, contract work, services, transportation, utilities, communications, rentals, personal and traveling expenses, insurance, taxes, depreciation and other expenses of gas processing plants.

Depreciation, depletion, and amortization

As stated earlier Shell employs the successful efforts concept of accounting for extractive costs. Under this concept these costs which do not result directly in the discovery of oil and gas reserves are expensed as incurred because they do not provide future benefits in terms of future revenues. Only those costs that directly relate to reserves discovered are capitalized. The manner in which these capitalized costs are charged against income via depreciation, depletion, and amortization is described below.

Work in progress

Shell accords the following treatment to the work

in progress accounts. Intangible wildcat drilling costs are accumulated in these accounts and are immediately expensed in full. If the wildcat well is determined to be successful, the expensed cost is reversed and the cost is transferred to the producing investment account. If a dry well results, or a portion of the hole is abandoned and plugged back, the associated cost will be retired from work in progress along with an equal amount of amortization.

The costs of intangible development drilling and secondary recovery are accumulated in work in progress and are transferred to the producing investment account if the operation proves to be successful. If the operation is unsuccessful, the costs are charged to current expense.

When tangible development costs for exploration, development, and secondary recovery are successful, they are transferred to the producing investment account. If drilling is unsuccessful, the costs pertaining to unrecoverable tangible equipment and other costs for dry holes will be removed from work in progress and charged to dry hole expense account. Recoverable equipment is returned to stores stock.

Capital investment accounts

Producing properties (leasehold costs)--Shell depletes producing property on a unit of production basis, by field (cost center). The unit of production rate is determined by dividing the unit investment by the estimated net proved developed and undeveloped reserves (which are defined as the estimated quantities of oil and gas which geological engineering data demonstrate with reasonable certainty to be recoverable in the future from reservoirs under existing economic and operating conditions). Each field's monthly depletion provision is the field's net production for the previous month times the unit rate for the field. When a producing lease is surrendered, the leasehold cost and associated accumulated depletion are retired.

Nonproducing properties--Nonproducing property is amortized monthly based on historical experience which considers the average holding period, the average percentage of leases that will eventually prove to be nonproductive, and relative

dollar amounts of surrendered leases versus successful leases. Rates are set so as to amortize over the average holding period that portion of total leasehold costs representing leases that will eventually prove nonproductive. If an individual property is proven productive, its acquisition cost is transferred to the producing property account. The amounts accumulated as amortization for nonproducing property are not transferred to the producing property account. When nonproducing property is surrendered, it is considered to be fully reserved and the cost and associated amortization are retired.

Well, lease, and field tangible and intangible drilling costs--These costs are amortized on a unit of production basis by field. The unit of production rate is determined by dividing the unit investment by the estimated net developed reserves (which are defined as the proved reserves to be recovered through existing wells and with existing facilities). Each field's monthly provision is the field's net production in the previous month times the unit rate for the field. If a well is abandoned, the intangible and tangible drilling costs and respective accumulated amortization are retired.

Other capital investments, such as machinery and tools, auto and marine equipment, exploration and land equipment, communications facilities, gathering lines and facilities, and office furniture are depreciated on a straight-line basis over the estimated useful lives of the particular assets.

Allocation of revenues and costs to wellhead products

The Shell E&P department records revenue separately for each product produced at the wellhead. Revenues for both sales and transfers are separately recorded at the price paid by third-parties--either the Government-regulated price or market price. Transfers (products transferred between departments) are recorded by Shell E&P at the third-party price for memorandum purposes only; no actual transfer of funds takes place.

The E&P department does not segregate costs for wellhead products. However, Shell maintains a corporate inventory account of oils and chemicals which includes a cost for produced crude oil in inventory. Since crude oil production costs and gas production costs are recorded jointly in one series of accounts, the portion applicable to crude oil production is arbitrarily calculated for inventory purposes, based on relative sales values. In addition to the allocated costs attributed to crude oil in the corporate inventory are the costs of transportation, gathering, storage, and outside purchases of crude oil and products. These costs which are used to establish a corporate inventory value for crude oil in inventory do not include all of the costs for E&P operations. Examples of E&P cost items not contributing to the cost of crude oil in corporate inventory include the Exploration department overhead, the Land department overhead, dry hole costs, and oil and gas lease rentals.

Effect of cost on wellhead product pricing

Shell officials stated that the costs of exploration and production are not a primary determinant in establishing the prices at which Shell sells wellhead products to independent refineries. The prices are either Government-regulated or negotiated market prices. The sales value to independent refineries is also the value at which intra-company transfers are recorded. As indicated earlier, transfer prices are memorandum values only. These values are used for departmental analyses; no transfer of funds occurs.

Company use of reserve information

The following reflects Shell's reserve terminology and corresponding definitions in their order of reliability.

Proved developed ultimate recovery	That portion of proved ultimate recovery which is producible from wells, projects, or plants which are essentially installed.
Proved ultimate recovery	That portion of probable ultimate recovery which geological and engineering data demonstrate with reasonable certainty to be recoverable.

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Probable ultimate recovery	The expected volume to be ultimately produced.
Hydrocarbons in place	The estimated volume of hydrocarbons in place prior to any production.

Only proved ultimate recovery and proved developed ultimate recovery are reported to the stockholders in the annual report.

Besides reporting to stockholders, Shell uses reserves information to:

--Prepare its annual budget.
--Evaluate company progress.
--Amortize assets.
--Support financing arrangements.
--Compute ad valorem taxes.
--Evaluate capital projects.
--Present assets of the company.
--Select drilling sites.

A brief discussion relating each of the above uses of reserves information follows.

--Prepare its annual budget. Based on expected production estimates which are derived from proved reserve estimates, Shell projects its revenues and production expenditures.

--Evaluate company progress. Shell's ability to continue to produce estimated reserves quantities, to locate replacement reserves, and to increase its recoverable reserves through discovery and supplementary recovery techniques is evaluated by studying the trend of past reserve data and by projecting future reserves.

--Amortize assets. Shell uses the unit of production method for amortizing the costs of producing properties. The reserves category used in computing depreciation and amortization by the unit of production method is net proved developed ultimate recovery reserves, while the basis for computing depletion is net proved ultimate recovery reserves.

--Support financing arrangements. Financial institutions use Shell's proved reserve data in analyzing the risk and potential of prospective financial assistance.

--Compute ad valorem taxes.

--Evaluate capital projects. Shell uses the estimated quantity and recoverability of reserves proved and/or probable for analyzing the justification for capital expenditures.

--Present assets of the company. Shell officials regard proved reserves as the primary asset of the E&P department.

--Select drilling sites. Shell uses the estimated area of a reservoir to determine the sites for development wells that will eventually define the parameters of the reservoir.

As indicated above Shell officials consider reserve estimates to be an integral part of company planning activities, analysis of current operations, and in evaluations of company past performance.

Shell's annual report discloses a history of net proved reserve estimates. The 1976 annual report discloses both proved developed and proved undeveloped reserves of crude oil and condensate, natural gas liquids, and natural gas.

Shell does not value its reserves disclosed in the annual report. However, Shell does forecast the expected revenue from future anticipated production for internal purposes only. The expected revenues are forecast in preparing profitability analyses, annual budgets, 2-year forecasts, and 10-year forecasts. The profitability analyses are incorporated in the preparation of portions of the annual budget, the 2-year forecasts, and the 10-year forecasts. Because the value of anticipated production assumes a certain level of future prices, actions of such parties as the Organization of Petroleum Exporting Countries, the Federal Energy Administration, and the Federal Power Commission can greatly affect the reliability of future forecasts.

Just as the value of future production is estimated, the reserve quantities are estimated. The quantities of

reserves are the consensus of log expert engineers, geologists, and reservoir specialists. In order to monitor the accuracy of the estimates, Shell's reserve estimates are reviewed at least once a year by headquarter's reservoir specialists. Changes in estimates also may result from the monthly routine process of monitoring a field's target production with the actual monthly production. If a significant difference between target production and actual production occurs, the reserve estimates are reviewed and variances explained.

A variety of computations are used in computing reserve estimates. According to Shell officials, however, the accuracy of the estimates depends more on the estimator's experience and the age of the producing reservoir (i.e., extent of production history) than on the type of calculation employed.

Shell's financial statements do not indicate or disclose how reserves are estimated.

Ability to restate the financial statements

Upon completion of a recently approved program to modernize and restructure Shell's exploration and production financial and management data system, Shell officials believe they will have the ability to restate its financial statements without undue difficulty or significant cost. The modernization will change the system from a sequential step-by-step method of data accumulation to a data base concept with random access capability. Since the data base concept will store data in detail and provide this capability, they believe that the system should be flexible enough to meet both present and future financial and governmental reporting requirements.

Contingencies and commitments

In 1975, the Financial Accounting Standards Board promulgated standards of accounting for loss contingencies through the issuance of Statements of Financial Accounting Standards No. 5 and No. 11. In Statement No. 5, a loss contingency is defined as an existing condition, situation, or set of circumstances involving uncertainty as to possible loss that will ultimately be resolved when one or more future events occur or fail to occur. Shell officials do not believe that any material losses

are likely to result from contingencies. Consequently, no provision has been made in the accounts for anticipated losses. Contingencies would be recorded in the accounts at token amounts (one dollar) for control purposes only.

On the other hand Shell defines commitments as events which are certain to occur in the future. At the present time Shell has only one active commitment relating to the operations of the E&P department. This commitment is for the abandonment of offshore platforms and facilities.

Because offshore abandonment costs are expected to fluctuate significantly from year to year and because these costs relate to revenue that will be realized in years prior to the incurrence of these costs, Shell makes an annual provision for the portion of these costs that it feels should be matched against current revenues. This provision is made by charging to expense one-tenth of a 10-year adjusted forecast of abandonment costs. The 10-year adjusted forecast consists of the abandonment cost expected to be incurred in the next 10-year period net of salvage value and adjusted for the reserve balance at the beginning of the current year. Beginning with 1977, a new 10-year forecast will be prepared annually whereas previously the forecast was prepared biennially.

The change to an annual forecast occurred because of the dramatic changes in expenditure estimates that occurred from one biennial period to another. For example the 1977-1984 abandonment costs estimates increased by $143 million over the 1975-1984 estimates. According to Shell officials, the increase was due primarily to differences in 1977 and 1975 costs estimates and changes in abandonment date estimates.

Effect of a change from successful efforts to full cost

In mid-1976 Shell prepared a comparison of actual financial results to that which would have resulted under a hypothetical full-cost accounting system. The comparison analyzed the 13-year period from 1963 through 1975. The study was not based on an indepth analysis but was designed to only provide an indication of the effects a change might have.

Shell's comparison indicated that under the

hypothetical full-cost concept, net income would have been stated about 9 percent higher than it was using the successful efforts concept. In one year, 1972, the comparison indicated that full cost net income would have been lower than that actually stated using the successful efforts concept.

The reason that computed income generally increased under the full-cost concept is that the additional capitalized costs under the hypothetical full-cost concept were not entirely offset by increased amortization except in 1972. These additional capitalized costs, under the hypothetical full-cost concept would result in higher amortization rates as the property is produced, thus, reducing income in subsequent years, below that which would be computed under the successful efforts concept.

While net income generally increased, balance sheet items were also affected. Increases occurred in capital assets and stockholders' equity with decreases in the rate of return on stockholders' equity under the full-cost concept.

Shell officials were unable to provide any estimate of cost or necessary man-hours to effect an actual change to full-cost accounting.

ENCLOSURE I

HOUSTON OIL AND MINERALS CORPORATION

OVERVIEW OF COMPANY OPERATIONS

Houston Oil and Minerals Corporation (HO&M) was incorporated in 1966 as the successor to two companies organized in 1928. The operations of the predecessor corporations were confined to investments in oil and gas royalties. In 1963 operations expanded to include the acquisition and further development of producing properties and the exploration and development of undeveloped properties with outside participants.

In 1968 the company began concentrating its expenditures in a limited number of properties and retaining all or substantially all of the working interests. In this connection the company emphasized the purchase of producing properties that were thought to have potential for undiscovered or undeveloped reserves. HO&M management considered development of producing properties to be of lower risk than exploration of properties having no previous production.

In December 1971 the company acquired, for $2,700,000, certain oil and gas properties which included its North Point Bolivar Field in Galveston County, Texas, on which there were four shut-in oil and gas wells. Oil production from shallow formations in this field began in June 1972. Gas was discovered by deeper exploratory drilling and production from this discovery began in 1973.

Revenues from the company's operations increased rapidly as a result of production from the North Point Bolivar discoveries. In 1974, 66 percent of the company's total revenues of $37,030,000 were attributable to production from this field.

The company's capital expenditures for its operations increased from $1,059,000 in 1970 to $71,890,000 in 1975 and $162,982,000 in 1976. The planned capital expenditure budget for 1977 is $250,000,000. The number of company employees increased from 37 in March 1972 to 250 in April 1976, and to 563 in May 1977.

Capital expenditures have been primarily financed by secured bank borrowings, the proceeds of public offerings of securities, gas prepayments, production payments, and

internally generated funds. The company's aggregate long-term indebtedness increased from $3,164,000 on December 31, 1970, to $187,240,000 on December 31, 1976. Generally, all HO&M reserves are pledged as security for this indebtedness.

The company also has 100 percent ownership in a small intrastate pipeline.

ACCOUNTING POLICIES AND PRACTICES

HO&M uses the full-cost concept of accounting. Accordingly, they capitalize all costs incurred in the acquisition, exploration and development of oil and gas reserves, including costs of abandoned leaseholds, delay rentals, dry hole costs, leasehold equipment, and certain allocable administrative expenses.

The company adopted the full-cost concept of accounting in January 1971, in order to relate total investment to total oil and gas reserves. It wanted to reflect the total costs of finding its reserves and to amortize such costs as the reserves are produced. They believed that the full-cost concept gives a better presentation of the costs associated with finding oil and gas.

To accomplish this end, costs are accumulated in various cost pools on a country-by-country basis. Depletion, depreciation, and amortization are computed for each cost pool on a unit of production method based on estimated recoverable reserves attributable to the respective cost pools.

Cost center

The company believes that the establishment of cost centers based solely on geographic determinants is inconsistent with the above full-cost concept. However, due to the wide variations in political structures and the various degrees of political uncertainty in areas outside of the United States, costs are accounted for on a country-by-country basis rather than solely on a company-wide basis. At the end of 1976, HO&M had activities in Australia, the United Arab Emirates on the Arabian Gulf, and offshore Sharjah. At present, HO&M's activities in foreign areas are limited and none are in production.

Accounts used for recording costs

The company does not accumulate costs according to the five categories (prospecting, acquisition, exploration, development and production) mentioned in section 503(c) of the Energy Policy and Conservation Act. Capitalized cost data are accumulated in cost pools which relate to the type and status of costs incurred rather than the activity involved.

The cost pools used by HO&M are:

Royalty cost pool--This cost pool contains the cost of producing royalty interests nonproducing mineral fee and royalty interests, and the costs of any royalty interests which may have expired or been abandoned.

Working interests cost pools

Work in progress--This cost pool is used to accumulate all costs relating to exploratory drilling prospects. All costs incurred in assembling leases for drilling a prospective area are included. These costs are not allocated to individual leases, but are accounted for on a prospect (representing a potential field) basis. The costs charged to this account include all lease acquisition costs (bonus, brokerage, abstracts, title, etc.), seismic and geophysical costs, and all other costs associated with assembling and maintaining a block of leases preparatory to exploratory drilling. This cost pool is also used to accumulate the costs of drilling operations.

Intangible development costs--This cost pool represents HO&M's net intangible development costs associated with producing oil and gas properties. These are costs transferred from work in progress or are direct charges and include all intangible costs incurred in the drilling and completion of producing oil and gas wells. Also included are costs incurred in plugging back and recompleting in new well zones.

Producing leaseholds--These costs represent HO&M's net leasehold costs associated with producing oil and gas properties. These are costs that have been transferred from work in progress and other direct

charges in connection with the acquisition of leasehold rights on producing properties.

Capitalized development costs--Capitalized development costs represent costs incurred in the exploration for and the development and acquisition of oil and gas reserves (1) which are not directly related to a specific producing property, and (2) which are directly related to previously producing properties that have been abandoned. For the most part, these costs are that part of the company's investment in oil and gas reserves attributable to "finding costs" associated with nonproductive exploratory activity. In addition this cost pool contains indirect costs not directly related to producing properties but which are considered part of the company's total investment in its reserves.

Included as part of the above-mentioned costs are the costs of abandoned prospects, nonproducing leases, all costs of drilling nonproductive wells, delay rentals, and costs transferred from the producing accounts upon abandonment of a field. In addition to the preceding direct costs, charges for exploration overhead are made to this account. Such charges include salaries and benefits of the geologic and land staff, transportation expense, and the cost of maps, logs, supplies, drafting and other direct cost incurred in connection with the activities of the exploration staff.

Lease and well equipment--The costs in this account represent HO&M's net cost for equipment used directly in connection with the production of oil and gas wells. Included are the costs of casing, tubing, pumps, other downhole equipment, pumping units, separators, heaters, wellhead and tank battery equipment, and other surface equipment. All of this type of equipment is directly associated with the wells located on the producing leases.

Compressors and other--Compressors and other equipment, such as vehicles and office equipment are carried in various subaccounts in this cost pool.

Depreciation, depletion, and amortization

Depreciation, depletion, and amortization are computed separately for each cost pool.

Royalty cost pool--Depletion for the royalty cost pool is computed on a unit of production method based on the company's net royalty reserves.

Work in progress--Costs in this pool are regarded as in-process amounts (much the same as in-process items or inventories in other industries) and are not amortized. They will be subject to amortization after transfer to one of the other working interest cost pools.

Producing leaseholds--Depletion for producing leaseholds is computed on a unit of production method based on total proved (developed and undeveloped) working interest reserves.

Intangible development costs, lease and well equipment, and capitalized development costs--Amortization for these cost pools are on a unit of production method based on the proved developed working interest reserves.

Compressors and other equipment items--Costs in this cost pool are depreciated on a straight-line basis over the estimated useful lives of the equipment items.

These methods for computing depreciation, depletion and amortization would apply to all company cost centers.

Allocation of revenues and cost to wellhead products

Revenues received by the company are recorded separately for oil, gas, and natural gas liquids. Condensate is recorded as oil revenue. The company does not allocate costs to wellhead products.

Expenses other than those in the cost pools (e.g., production expenses, interest expenses, or other operating expenses) are likewise not allocated to wellhead products, but rather appear as period costs on the income statement.

HO&M does not allocate costs for inventory purposes.

The inventory levels of crude oil are very small and are carried on the books at market values. No inventories of natural gas are maintained.

Effect of cost on wellhead product pricing

Officials of HO&M stated that selling prices are not governed by the cost of exploration and production operations. The prices are either Government or market regulated. Considering these factors HO&M invests its available resources in those prospects which management expects to be profitable. Thus changes in anticipated prices of oil and gas (both old and new) affect the extent of their financial resources and their determinations as to whether a prospect appears to be a profitable venture.

Company use of reserve information

The company reports estimates of their proved oil and gas reserve amounts (developed and undeveloped) in their annual report. The company does not publicly place a value on these reserves. The company occasionally discloses its net investment balance per unit of proved mineral reserves. This figure is the amortization rate used to compute a particular year's depreciation, depletion and amortization expense. Approximate rates for a given year can also be calculated from the published annual report by relating the amortized amount to the year's production of oil and gas.

HO&M's uses of reserve information are similar to those of Shell. HO&M uses reserve information to:

--Prepare its annual budget.
--Evaluate company progress.
--Amortize assets.
--Support financing arrangements.
--Compute ad valorem taxes.
--Evaluate capital projects.
--Present assets of the company.
--Select drilling sites.

A discussion relating each of the above uses of reserve information follows.

--Prepare the annual budget. The expected production which is derived from reserve estimates is used to project revenue and production expenditures.

--Evaluate company progress. By studying the trend of past reserve data and by projecting future reserve data, a company's ability to continue to produce in quantity, to locate replacement reserves, and to increase its recoverable reserves through discovery and supplementary recovery techniques can be evaluated.

--Amortize assets. HO&M uses the unit of production method for computing the amortization rate previously described.

--Support financing arrangements. HO&M relies heavily on debt financing as a source of operating capital. The financial institutions use HO&M's reserve data in analyzing the risk and potential of prospective financial assistance.

--Compute ad valorem taxes.

--Evaluate capital projects. Estimates of the quantity and recoverability of reserves are used to evaluate drilling prospects and other capital expenditures.

--Present assets of the company. HO&M officials regard proved reserves as one of the company's primary assets.

--Select drilling sites. The estimated area of a reservoir is used to determine the sites for development wells that will eventually define the parameters of the reservoir.

As shown above HO&M officials consider reserve estimates to be an integral part of future company plans, analyses of current operations, and evaluations of past performance. HO&M's annual report discloses the history of its proved reserves back to 1968, the year the company's current operating philosophy was adopted.

The company's published reserves are calculated by independent petroleum engineers.

Ability to restate the financial statements

The company uses outside computer services for the preparation of many of their management reports; however, much is still done by hand. If the company is required

ENCLOSURE I

to convert to the successful efforts concept of accounting, the controller estimates that a conversion going back 5 years would have to be accomplished manually and would take approximately 6 months using four people.

Contingencies and commitments

At the time of our visit, HO&M did not have any amounts set aside for contingencies or commitments that would affect earnings. Also, no amounts have been identified in their 1976 financial report or their form 10-K to the Securities and Exchange Commission.

Effect of a change from full-cost to successful efforts

HO&M has not made any comparisons of financial effect that would result under a hypothetical successful efforts accounting system.

Because of the small size of the company and its rapid growth and large level of exploration expenditures in relation to total company operations, such a comparison would probably show significant decreases in reported net income in each of the past few years due to the expensing of dry hole costs and other nonproductive expenditures. This is the result that comparisons of the two accounting concepts show when the company is in a growth situation.

CHAPTER V – FULL COSTING VERSUS SUCCESSFUL EFFORTS COSTING

INTRODUCTION

It is obvious from the discussion in the preceding Chapter that there are differing views as to the characteristics that would call for the capitalization (or deferral) of costs incurred by companies in the extractive industries. This Chapter discusses in detail two basically different alternative accounting concepts that have evolved as a result of those differing views and that have gained acceptance in the extractive industries, as well as certain modifications of each concept. 184

One concept that has achieved wide acceptance in the oil and gas industry is generally referred to as "full cost" accounting. Under that concept, all costs incurred in prospecting for mineral reserves and in acquiring, exploring, and developing mineral properties within relatively large cost centers (such as countries) are capitalized and charged to expense (amortized) as the mineral reserves deemed to be related to those costs are produced from those cost centers. Those costs include prospecting, leasing, acquisition, carrying, exploration, and development costs, together with associated indirect costs (i.e., that portion of general and administrative costs that can logically be related to prospecting, exploration, acquisition, and development). Operating costs, such as lifting costs and general and administrative overhead applicable to current production and general corporate matters, are charged to expense as incurred. 185

The other concept that has also achieved wide acceptance in the oil and gas industry and in other extractive industries is generally referred to as "successful efforts" accounting. Under that concept, only those costs resulting directly in identifiable future benefits through the discovery, acquisition, or development of specific, discrete mineral reserves are capitalized; costs that do not provide identifiable future benefits (nonproductive costs) are generally charged to expense as incurred or are written off as a loss when the costs are determined to be nonproductive. Under that concept, the types of costs that are often charged to expense as incurred may include all or part of the costs relating to geological and geophysical studies, carrying of undeveloped properties, nonproductive exploration and development efforts, and general and administrative functions. Costs incurred to acquire undeveloped properties are often initially deferred and either (1) held intact until those properties have been proved to be productive or to be worthless or (2) amortized to expense, either in total or partially, over the period the properties are held prior to being proved productive or nonproductive. Costs associated with properties that prove to be nonproductive are written off as a loss during the period in which the properties are determined to be nonproductive. Capitalized costs are identified with specific mineral reserves (e.g., mineral deposit, ore body, mine, field, basin) or property acquisition units (e.g., mineral lease, concession), and the capitalized costs assigned to each producing cost center are amortized as production results from that center. 186

In support of their position, advocates of the full cost concept often point to the significantly increased acceptance this method has had in the United States in recent years. For example, in the comments presented by the Ad Hoc Committee (Petroleum 187

Companies) on Full Cost Accounting (Ad Hoc Committee) to the Securities and Exchange Commission in 1973, it was noted that, to the knowledge of the Committee "... one company used full cost accounting in 1958; approximately 10 companies used full cost accounting in 1962; by 1965, this number had increased to approximately 25; in 1968, about 50 companies were using full cost accounting; and the number had jumped to more than 140 by 1973."[1] The Ad Hoc Committee also noted that, out of the total of 296 oil and gas producing companies reviewed by the Ad Hoc Committee, 19 companies did not disclose their accounting policies in sufficient detail in their financial statements to permit classification, 10 companies used accounting principles that could not be identified definitively as being either full cost or successful efforts, and 5 companies used both methods of accounting for different geographic areas. Of the remaining 262 companies, 136 (52 percent) used full cost accounting and 126 (48 percent) used some form of successful efforts accounting. From that data, the Ad Hoc Committee concluded that full cost accounting was the prevailing principle in the U.S. oil and gas industry.

188 In their comments to the SEC, the Ad Hoc Committee also advocated the disclosure of data about mineral reserves to ensure adequate information about the success or failure of exploration and development efforts. As is discussed in Chapter XIII, however, few companies employing either the full costing or successful efforts costing concepts presently disclose such data in their financial statements.

189 In early 1974, John H. Myers, Professor of Accounting at the University of Indiana, completed a research study entitled *Full Cost Vs. Successful Efforts in Petroleum Accounting: An Empirical Approach*. Professor Myers created a model company and introduced various transactions to determine the accounting results of applying full cost and successful efforts accounting. Professor Myers, by measuring the results achieved against the "usefulness criterion," concluded that full cost accounting better served the needs of users of financial statements. Professor Myers recommended the use of large cost centers and disclosure of data on oil and gas reserves. The Myers' study was sponsored by the Ad Hoc Committee, which published his findings as a result of both its immediate concern over a Securities and Exchange Commission release containing proposed rules that seemed to indicate an opposition to the use of full cost accounting and its broader concern over the need for an independent and objective examination of the merits of full cost accounting in anticipation of the FASB's consideration of accounting in the oil and gas industry.

190 Others have stated that full costing has become the principal basis of accounting by Canadian oil and gas companies and that this method is followed by most of the publicly owned independent or smaller oil and gas companies (those other than the so-called major companies) in the United States. They also claim that most new companies created during the last 10 to 15 years for the purpose of exploring for oil and gas reserves have adopted the full cost method of accounting.

191 Advocates of the successful efforts method, however, maintain that it is the predominant accounting method in all of the extractive industries, including both the oil and gas industry and the mining industry. It was pointed out in 1972 by an advocate of that method that "companies . . . with a combined share of approximately 87 percent of

current U.S. [oil and gas] production . . . use what is commonly referred to as 'successful efforts costing'."[2] Those who support the successful efforts method also point out that at the present time, full costing is seldom used in the United States in extractive industries other than the oil and gas industry, whereas successful efforts costing has gained wide acceptance in all extractive industries.

Many who support full costing argue that, while they consider it logically applicable 192
to the oil and gas industry, it may not be applicable to other extractive industries because of differences in operations in the different sectors of the extractive industries. A principal difference commonly cited is that an oil and gas company usually incurs a much greater amount of costs in activities conducted prior to the discovery of reserves as compared to the amount of costs that a mining company normally incurs in pre-discovery activities. Another difference frequently mentioned is that the degree of risk and uncertainty in pre-production activities is much higher for an oil and gas producing company than for a company in other extractive industries. Some argue that because of those differences the issue of full costing versus successful efforts costing is much more important and controversial for the oil and gas industry than for other extractive industries.

BASIC ISSUE TWO: Which, if any, of the following traditional historical cost accounting concepts should be used in the extractive industries: full costing, successful efforts costing, or some modified form of either concept (explain)? Why? 193

INSTRUCTIONS TO RESPONDENTS

1. *Respondents are asked to indicate whether their answers to Basic Issue Two relate to:*
   - A. *Only the oil and gas industry.*
   - B. *Only the mining industry.*
   - C. *All extractive industries. If so, please indicate whether the answers should be:*
     - (1) *The same for all extractive industries (explain why), or*
     - (2) *Different for the oil and gas industry and the mining industry (explain why).*

2. *Respondents are requested to respond directly to Basic Issue Two above which relates to historical cost accounting only. Questions related to "value" basis accounting concepts are discussed in Chapter XIV.*

FULL COSTING CONCEPT

Arguments in Favor of the Full Costing Concept

The major arguments that have been given to support the full costing concept are 194
summarized below.

ENCLOSURE II

1. In searching for, acquiring, and developing mineral reserves, a company will normally incur costs of various types that are related to many different prospects and in diverse geographic locations. All of those costs are incurred with the knowledge that many of those prospects will not result directly in the acquisition or development of reserves. However, the company expects that the benefits obtained from prospects that do prove successful will be adequate to recover the costs of all activities, both successful and unsuccessful, and will result in an ultimate profit. Thus, all costs of every venture are important and unavoidable in the discovery, acquisition, and development of whatever reserves ultimately result from the efforts as a whole, and are thus directly associated with the company's reserves.
2. A better matching of costs and revenues is achieved when total costs are amortized on a pro rata basis as total reserves are produced. Under successful efforts accounting, a company with an outstandingly successful exploration program may report reduced earnings or even losses by charging a large part of its exploration costs to expense during the period in which the costs are incurred. On the other hand, under successful efforts accounting, a company discontinuing its exploration program may actually report increased earnings for some time because, while it is depleting its existing reserves, it is incurring no costs in new exploration activities. Since long-run success depends on finding new reserves, the use of successful efforts accounting in both of those situations would give rise to misleading operating results. Under full costing, the reported earnings more clearly reflect the magnitude and effectiveness of the exploration and development program.
3. Successful efforts accounting usually results in an unwarranted understatement of assets and net income, particularly in the case of a growing company, and is thus an abuse of the conservatism convention. This understatement of assets and net income in the earlier accounting periods will almost invariably result in an overstatement of net income in subsequent years.
4. The mineral properties of a company in the extractive industries are, in effect, a long-term inventory item and should be accounted for on the basis used to account for such items, i.e., full absorption costing. The costs of unsuccessful ventures are essentially equivalent to normal, recurring spoilage in manufacturing, which under generally accepted accounting principles becomes a part of the cost of the finished goods.
5. Financial statements of different companies within an extractive industry could be compared with greater facility and meaningfulness to those of other companies if the full cost method were used by all companies, because the total cost of mineral properties would be clearly shown, and because costs and revenues would be more properly matched. Financial statements based on full costing, coupled with information regarding changes in reserve quantities and values, would facilitate comparison of cumulative and current results of exploration and development with the total costs thereof and would thus provide a basis for comparing different companies. Because the successful efforts method of

accounting understates the company's assets and equity accounts, it is impossible, in the case of extractive industry companies using successful efforts accounting, to compute two of the most common business profit yardsticks – return on equity and return on assets employed – on a basis comparable to that used in computing them for companies in other industries. Since assets, equity, earnings, and return on equity must be considered in making business and economic policy decisions affecting the extractive industries, it is essential that the full cost of the components making up those items be considered.

6. For companies in the extractive industries that are small but have relatively large exploration costs, the information most useful to stockholders is the trend of operations as reflected by reported earnings. Full costing permits the financial statement reader to develop a more meaningful analysis of the trend of operating results because there are no distortions caused by random exploratory charges or write-offs of nonproductive costs that might vary widely from year to year.
7. Full costing provides a more meaningful balance sheet presentation. The primary asset of a mineral producing company is usually its total reserves of minerals, which are basically similar in nature and are, therefore, interchangeable products regardless of where they are found; thus, the total amount of costs incurred to find and develop those reserves is usually more meaningful than the sum of the amounts applicable to individual producing property units, wells, or mines. The total cost of reserves includes the costs of unsuccessful efforts as well as the costs of finding and developing specific productive reserves, and all of those costs should be presented in the balance sheet.
8. Since the principal asset of a mineral producing company is usually the reserves it owns, the value of those reserves is of great importance. However, historical cost accounting, not current value accounting, is the generally accepted basis of financial accounting and reporting today. Nevertheless, full costing, even though based on historical costs, results in asset carrying values that more nearly reflect the actual values of most companies' reserves than does successful efforts accounting.
9. The ability of management to subjectively influence annual reported earnings is reduced under full costing. Under successful efforts accounting, management may be inclined to smooth or average the periodic earnings reported by: (1) deciding to delay final determination of the outcome of a project in order to defer the write-off of an unsuccessful venture, thus delaying loss recognition; (2) incurring larger or smaller amounts of costs that the company would normally charge to expense as incurred in such activities as exploration; or (3) postponing or moving forward the times at which such costs are to be incurred. Even where there is no intent to manipulate reported financial data, wide variations in reported earnings may result from fluctuations in activities that pertain to finding and developing reserves to be produced in the future and do not really affect current operations.
10. The underlying concept of successful efforts accounting is that only those costs contributing directly to finding and developing specific mineral reserves should

be capitalized, all other costs should be charged to expense as incurred. Success or failure, however, cannot be known until exploration and development efforts have been substantially completed, and those efforts can often span a number of years. Accounting decisions during the interim must be based on subjective interpretations, and different individuals applying the concept to identical circumstances can often arrive at different results because they follow different approaches in applying it.

11. The use of full costing aids newly formed companies and smaller producers in securing funds for the exploration and development of mineral reserves. Under successful efforts costing, a company newly engaged in exploration and development activities would be required to charge a substantial portion of its finding costs to expense as incurred, but it probably would not have revenues adequate to cover those charges. Substantial losses might thus have to be reported by a company, even though its program of acquiring mineral reserves for subsequent development and production could be highly successful, and this might severely limit its ability to acquire new capital. Because smaller producers have consistently carried on a significant portion of the total exploration effort in the United States for many years, partly due to the fact that they were able to obtain greater debt and equity financing, their efforts have not only served to augment the supply of badly needed mineral reserves but have also increased the competition and enhanced the efficiency in the extractive industries.
12. Accounting methods should reflect the results of management's plans and operations, and in allocating resources to the search for reserves, top management plans in terms of the overall exploratory and development effort, based on the total costs involved and the total value of reserves added. Management knows that in the long run successful ventures must provide for the recovery of costs of unsuccessful ventures, so it relates estimated total reserves to total costs incurred, not just to the costs of the specific ventures that actually result in those reserves.
13. The claim by advocates of the successful efforts concept that the nature of prospecting costs is virtually identical to that of research and development costs fails to recognize the distinct difference with respect to the types of assets most often derived from prospecting activities and those derived from research activities. The fact that tangible assets support the capitalization of prospecting costs distinguishes prospecting costs from research and development costs, so that the conclusions of *FASB Statement No. 2* are irrelevant to accounting for costs incurred in prospecting activities.
14. As a practical matter, full costing reduces the amount of procedural and mechanical accounting work, thus saving time, effort, and cost in maintaining accounting records. Since all costs incurred in prospecting, acquisition, exploration, and development are capitalized, there is less need to make arbitrary cost allocations that may prove to be inappropriate. Similarly, there is no need to prepare separate computations of amortization on individual properties or mineral deposits for financial reporting purposes.

15. The Federal Power Commission has required that certain classes of natural gas companies subject to its jurisdiction use full costing for all exploration and development costs incurred in relation to leases acquired after October 6, 1969. In establishing this requirement, the FPC concluded that full cost accounting is more consistent with the economics of exploration and development over a substantial period of time than charging such costs to expense as incurred. This decision lends weight to the arguments for full costing, and as a practical matter, companies affected by it would be best served by maintaining only one set of records to meet the needs of both financial accounting and FPC reporting.
16. Managements of companies that do not use full cost accounting often spend considerable time and effort in developing their total costs of finding and developing mineral reserves, for internal planning and control purposes. The underlying theories used in developing such economic evaluations are invariably similar to the theory of full cost accounting, and if those companies were to adopt the full cost method, it would provide them directly with the data needed on total costs.
17. The energy shortage in the United States and the country's dependence on costly, unstable foreign sources of energy have combined to create a high level of governmental and public interest in determining the total cost of finding and providing sources of energy. Accordingly, it is important that consumers come to understand that the extractive industries' finding costs and risks are high and that their success ratio is limited; costs that are charged to expense as incurred or are written off as losses are forgotten by the public or are blamed on management errors of judgment. When all costs incurred by the extractive industries in the development of energy resources can be viewed in total, the costs can be understood more clearly and in terms of economic realities.
18. It is possible that in the future Congress may regulate the prices of intrastate sales of natural gas and crude oil on a cost-recovery basis. If costs were to be used in determining the prices at which companies can sell their products, it becomes of overriding importance for those companies to capitalize all of the significant cost elements that they incur in finding and developing such products. Some believe that unless companies reflect this capitalization in their financial statements, they should have little expectation that it will be sustained for regulatory purposes.
19. The full cost accounting concept is used by many Canadian oil and gas companies, some of which are required to file financial statements with the U.S. Securities and Exchange Commission.

Modifications of the Full Costing Concept

Variations in the application of the full costing concept stem primarily from differences 195
in the sizes and types of cost centers that are used and the timing of the transfer of capitalized costs into producing cost centers for amortization purposes. Under the broadest concept of full costing, all costs incurred by a company in searching for, acquiring, and developing mineral reserves are capitalized and amortized on a pro rata

basis over all of the company's mineral reserves, no matter where they are located. This broad approach is referred to as the "company-wide cost center concept." Most companies that use full costing, however, adopt a country-wide (or continent) cost center concept. Under that concept, all the costs incurred in Indonesia (or in Asia), for example, would be capitalized and amortized on a pro rata basis against all of the company's reserves in Indonesia (or in Asia). If no reserves were found in Indonesia (or in Asia), the capitalized costs in that cost center would be written off as a loss, and if the capitalized costs were greater than the related estimated value of reserves in Indonesia (or in Asia), the costs would presumably be written down to that estimated value. Other modifications of full costing could result if such smaller cost centers as a field, basin, or province were selected. The issues associated with the selection of the cost center are examined in detail in Chapter VI of this Discussion Memorandum.

196 Under the full cost concept, pre-production costs incurred in a producing cost center may be transferred upon incurrence into the pool of capitalized costs associated with the center, so that those costs would be subjected to amortization immediately; or those costs may be deferred until the undeveloped properties to which they relate are found to be either productive or nonproductive, at which time the costs would enter into the computation of amortization in the center. Other variations in the timing of the transfer of capitalized costs under the full costing concept also exist. The issues associated with the transfer of deferred pre-production costs into producing cost centers are examined in Chapter VIII.

SUCCESSFUL EFFORTS COSTING CONCEPT

Arguments in Favor of the Successful Efforts Costing Concept

197 The major arguments that have been given in support of the successful efforts costing concept are summarized below.

1. Successful efforts costing endorses the traditional concept of an asset, viz., that an asset is an economic resource expected to provide future benefits. Thus, whenever it is decided that a cost incurred cannot be expected to lead to future benefits, the cost should be either charged to expense or recognized as a loss.
2. In theory, a cause and effect association can exist between the costs of nonproductive fields and the reserves in productive fields, or between losses applicable to unsuccessful ventures and capitalized costs applicable to successful ventures, only when there is a predictable association between total costs and reserves discovered as a direct result of incurring those costs. Although industry-wide statistics indicate a general predictable relationship between total number of wells or total footage drilled and total reserves added, those relationships have not been constant, and there is no assurance they will apply to the future. More importantly, no such relationship is predictable for an individual company. Accounting is done for individual companies, not for an industry as a

whole, and so for companies a clear association between finding costs and mineral reserves emerges only within an individual property unit or within a given field, area, or region in which mineral reserves are believed or known to exist. Even this association often is not evident at the time the costs are incurred, and that is when accounting decisions must be made.

3. The justification for reporting costs incurred as assets to be carried forward and matched against future revenues depends on whether a particular cost can be identified with specific reserves, or, as others would say, on whether the cost incurred results in the acquisition of a specific asset with identifiable value equal to or greater than the amount of the cost incurred. If this direct association does not exist, or if the asset obtained has no identifiable value, the cost must be charged to expense as incurred. Since a direct or specific association cannot exist between a nonproductive cost and reserves actually found or developed, the nonproductive cost should not be classified as an asset. There is no logic to the full cost approach of matching costs incurred in one project area with revenues derived from reserves discovered in another project area. Under the full costing concept, for example, costs associated with an unsuccessful exploratory venture in Florida might be capitalized and amortized against revenues derived from the production of reserves in Alaska.
4. Under full costing, certain costs are recorded as assets that do not meet the criteria of "exchangeability (severability)." For example, a dry exploratory hole cannot be sold or exchanged, and the costs incurred for it do not add any value to the enterprise or to mineral reserves previously discovered. Thus, its costs should not be recorded as an asset to be carried forward to future accounting periods.
5. Full costing depends on the concept of averaging results of applying economic resources to develop marketable commodities. This concept vitiates the cause and effect association between effort and result otherwise generally held to be one of the attributes required for asset determination. Because generally accepted accounting principles do not permit companies in other industries to capitalize costs that have no currently identifiable future benefit or value, the financial statements of companies in the extractive industries could be compared with greater facility and meaningfulness if those costs were accounted for under the successful efforts concept.
6. Expenses and losses should be reported on a timely basis, and costs that do not in themselves result directly in future benefits are costs that are properly charged to expense as incurred or written off as losses, as appropriate. To capitalize costs relating to unsuccessful ventures results in postponing the financial reporting of the effects of expenses and losses. If unsuccessful exploratory and development costs are capitalized and amortized over future periods, the financial statement reader will find it difficult to determine the extent to which profits from prior discoveries are used to offset current unsuccessful ventures.
7. The full costing approach can result in financial statements that obscure the costs incurred in unsuccessful exploration and development, especially when data are

not presented about mineral reserves discovered or developed, which is presently the situation where this approach is used. Under full costing, although management might conduct poorly conceived exploration and development programs that proved fruitless, this fact would not be disclosed; the costs would have been capitalized and combined with costs incurred in all previous exploration, acquisition, and development activities. Because of the "income smoothing" that results, the efficiency and effectiveness of management cannot be adequately evaluated. Income smoothing or averaging is not supported by generally accepted accounting principles.

8. Under full costing, extreme care must be taken to place a "value ceiling" on the total of capitalized costs to ensure that capitalized costs do not exceed the underlying value of the mineral reserves owned. This is particularly true for a newly-formed company or for a company with a rapidly growing exploration program. This value ceiling is often difficult to determine, particularly prior to discovery and in the early life of a new discovery. In fact, many years usually separate the time when costs are initially incurred in the extractive industries and the time when the results of the efforts related to those costs can be reasonably determined. However, under successful efforts costing, the problem of limiting the amount of capitalized costs is less crucial because the costs of unsuccessful efforts, which normally represent a large part of the total costs, will have been charged to expense as incurred or recognized as a loss when the effort was determined to be unsuccessful.
9. Empirical studies of capital market behavior have shown that securities' prices are not affected by changes in accounting methods and that the market takes into account the differences in accounting methods used by different companies. The claim that the full costing concept can benefit an entity's ability to obtain capital simply has not been borne out by those studies.
10. Even if the use of differing accounting principles were found to influence the behavior of the capital market, the selection of an accounting method should not be made with the sole intention of affecting investors' decisions, regardless of how socially or economically desirable the expected results might be. Accounting should report the results of business decisions rather than influence the making of such decisions by investors or management.
11. The claim that the full cost concept is necessary for managerial planning and control purposes is not supported by the fact that management decisions are usually made on a project or field basis. Managements, particularly those of small companies, are project oriented and plan in terms of the probabilities of success for each specific project. Their decisions as to whether to commit funds to a particular project or to abandon it are not significantly influenced by the status of other exploration or development projects being carried out simultaneously in other parts of the country, the continent, or the world. There may be theoretical merit in the view that costs identifiable with an unsuccessful project are related to whatever success a company may have had in finding or developing other mineral reserves as a result of that specific project, but there is no theoretical

merit in the view that the costs of unsuccessful ventures not even remotely identifiable with any successful deposit or reservoir can be considered costs of reserves found. Project failures are true losses, and any accounting procedure that obscures those losses by combining the costs of successful and unsuccessful projects serves neither management nor the investing public. Moreover, it does not reflect the actual process that management employs in deciding whether to commit funds to individual finding efforts.

12. Except as specified in the Addendum to *APB Opinion No. 2*, general purpose financial accounting and reporting standards should not be affected by governmental action, whether its objectives be rate-making, taxation, or other social, economic, regulatory, or political purpose.
13. Since current federal income tax law requires that tax accounting records be maintained on a property-by-property basis, the procedural and mechanical accounting work required for tax purposes can be minimized and carried out more efficiently by using many of the financial accounting records that are prepared under successful efforts accounting.
14. The determination of "total industry cost" of finding reserves should be based on industry data without regard to the accounting theory followed. The only important factor in determining "total industry cost" is for the data to have been prepared on a consistent basis. "Total industry cost" cannot be determined from an accumulation of costs reported in published financial statements, regardless of what accounting concept is followed, because a significant portion of the industry (individual operators, non-public companies, etc.) would be excluded.
15. If companies that are currently following successful efforts accounting were required to adopt full cost accounting retroactively, their revised reported earnings would probably show greater profits for prior periods computed on the basis of the full cost concept. Those upward revisions in reported earnings could precipitate pressure for a governmentally imposed roll-back in prices of oil and gas production and also could produce a public reaction that the companies deliberately understated their prior reported earnings, thus damaging the credibility of oil and gas producing companies.

Modifications of the Successful Efforts Costing Concept

Variations in applying successful efforts costing are quite common because of the 198
difficulty in determining which costs result directly in identifiable future benefits and can therefore be capitalized, and because there is a wide range of opinions as to the degree of accuracy with which such benefits must be measured before the costs incurred can be capitalized. For example, some companies charge to expense all geological and geophysical exploration costs as they are incurred, while other companies may conclude that a portion of geological and geophysical exploration costs is applicable to specific reserves discovered and acquired and will capitalize that portion. Some companies do not amortize deferred costs, prior to production of the related minerals, while a variety of methods are used by those companies that do. Some companies that use successful efforts

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accounting capitalize certain nonproductive costs incurred during the development process (e.g., dry hole development wells in the oil and gas industry), but other companies using successful efforts accounting charge those costs to expense as incurred. The more significant and most commonly used modifications of the successful efforts costing concept are examined in Chapters VII and VIII.

Source: FASB Discussion Memorandum, Chapter V, December 23, 1976.